

REMARKS/ARGUMENTS

Claims 57-59 stand withdrawn by the Examiner as directed to a non-elected composition. The claims of the application have now been amended to cancel claims 57-59 and add new claims 60-62. Claims 60-62 are directed to a “method” rather than a “composition,” but are otherwise identical to canceled claims 57-59.

The Examiner has noted the use of various trademarks in the specification of the application. The specification has now been amended to insert the symbols “®” or “TM” after the terms that, to the best of applicants’ knowledge, are registered with the United States Patent and Trademark Office or are otherwise asserted to be trademarks by the relevant persons.

The specification has also been amended to correct an inadvertent clerical error in paragraph [0067]. The term “monomeroligomer” has been deleted and replaced with “monomer and oligomer mixture” to be consistent with paragraph [0066]. No new subject matter is believed to be introduced by any of the above-referenced amendments.

Claims 44-47, 51-54 and 56 stand rejected under 35 U.S.C. § 103 as obvious over U.S. Patent Nos. 5,914,174 (“*Gupta et al.*”) in view of U.S. Patent Nos. 6,150,430 (“*Walters et al.*”), 6,328,446 (“*Bhalakia et al.*”) and 6,025,026 (“*Smith et al.*”), and Pub. No. 2003/0112384 (“*Tanaka et al.*”). In particular, the Examiner asserts that *Gupta et al.* discloses a method of preparing a photochromic polycarbonate lens comprising the steps of:

... providing a lens blank, applying a coating composition to the lens blank to form a [tie] coating layer, partially polymerizing the [tie] coating layer, applying a photochromic matrix layer to the coating layer; then

polymerizing the tie coating layer and the photochromic matrix layer
(At 4.)

Applicants respectfully traverse this basis for rejection.

Contrary to the Examiner's assertions, the cited prior art fails to disclose the claimed steps of making photochromic lenses, nor does the prior art disclose the use of the specific compositions set forth in the claims. The present application describes methods of making photochromic polycarbonate lens in which a tie coating layer is first partially polymerized on a lens blank. The tie coated lens blank is assembled with a mold for casting the photochromic matrix layer, and the tie coating composition and photochromic matrix layer are then fully polymerized. (See, e.g., ¶ 73.)

In contrast to the present application, *Gupta et al.* does not teach or suggest the step of forming a lens blank having a partially polymerized tie coating layer. Rather, *Gupta et al.* discloses the reverse process, in which the photochromic "precoat" layer is first partially polymerized on a mold surface. (Col. 4, lines 33-35; col. 4, line 65 - col. 5, line 1.) A lens blank is then added to the "precoated" mold to create a mold assembly for injection of a "polymerizable resin" to form an "adhesive layer between the photochromic "precoat" layer and the substrate lens blank" (col. 4, lines 37-41). Accordingly, *Gupta et al.* fails to disclose the steps of "allowing the solvent to evaporate to form a tie coating layer" on a lens blank, "partially polymerizing the tie coating layer" on the lens blank, and/or "contacting the [partially polymerized] tie coating layer and photochromic matrix layer," as set forth in independent claims 44 and 56 of the present application.

Gupta et al. also fails to disclose or suggest any composition for the “adhesive layer,” nor otherwise provides any specific example of making a lens using an “adhesive layer.” Accordingly *Gupta et al.* fails to disclose the steps of using a tie coating composition that includes the following elements: “a methacrylate monomer,” “a (meth)acrylated oligomer with a polycarbonate backbone,” “a urethane methacrylate oligomer,” and “a solvent” as set forth in independent claims 44 and 56 of the present application.

Furthermore, *Gupta et al.* fails to disclose a photochromic matrix layer having the composition described in the present application. *Gupta et al.* broadly discloses that the photochromic “precoat resin preferably contains a mixture of mono and multifunctional acrylates and methacrylates” (col. 4, lines 65-67). Example 1 of *Gupta et al.* describes a “precoat layer” having,

[A] typical formulation of isobornyl methacrylate (40%), neopentyl glycol diacrylate (41%), polymethylene glycol diacrylate (400) (15%), 1-hydroxy-cyclohexyl-phenyl ketone, bis-2,6-dimethoxybenzoyl-2,4,4-trimethylpentyl phosphine oxide (2%), and a hindered amine oxide (bis-2,2,6,6-tetramethyl-4-piperidyl-sebacate) (1%) (Col. 5, line 65 - col. 6, line 3.)

In Example 3 of *Gupta et al.*, “the hydrophilic diacrylate was replaced by isocetyl acrylate” (col. 7, lines 54-55). No other examples of “mono and multifunctional acrylates and methacrylates” are described. Accordingly, *Gupta et al.* fails to disclose the step of using a photochromic matrix layer composition that includes the following elements: “a flexible hydrophilic dimethacrylate monomer,” “a flexible hydrophobic multi(meth)acrylate monomer,” and/or “a urethane methacrylate oligomer, wherein the

multi(meth)acrylate monomer contains three or more methacrylate groups or acrylate groups” as set forth in independent claims 44 and 56 of the present application.

In addition, the Examiner argues that *Walters et al.* “discloses urethane [meth]acrylate oligomers for use in photochromic compounds” and that “[i]t would have been obvious to one of ordinary skill in the art to include urethane methacrylate oligomers for use in coating composition and photochromic composition” (at 5). However, the Examiner fails to provide any rationale to support the conclusion that urethane methacrylate oligomers would be useful in both photochromic matrix and tie coating compositions, particularly where the compositions serve distinctly different purposes.

The photochromic matrix composition must provide a favorable environment for operation of the photochromic dye, whereas the composition of the tie coating must “allow[] the photochromic matrix composition to adhere to a polycarbonate lens blank.” (¶¶ [0030], [0031].) The fact that urethane methacrylate oligomers may be useful in photochromic compositions does not imply that they will be useful in tie coating compositions. Neither *Walters et al.* nor *Gupta et al.* teach that urethane methacrylate oligomers have any particular properties at all, much less that urethane methacrylate oligomers are useful components in a tie coating composition that is “compatible with” and “facilitates adhesion” between the photochromic matrix layer and the polycarbonate lens blank. (¶ [0060].)

Moreover, one would not be motivated to combine *Gupta et al.* with *Walters et al.* to disclose the step of using a tie coating composition as claimed in the present

application. *Walters et al.* does not disclose the use of an adhesive coating, but, rather, teaches the modification of reactive groups formed on the surface of a substrate. As stated in *Walters et al.*,

The surface modification of the substrate produced by reaction of the organofunctional silane with the reactive groups on the substrate surface ***is distinguishable from use of a primer coating*** that is applied to a substrate in both layer thickness and mechanical film properties. (*Walters et al.*, col. 2, lines 39-43.) (Emphasis added.)

Thus, *Walters et al.* teaches away from using the “adhesive layer” coating disclosed in *Gupta et al.* and the use of a tie coating as claimed in the present application.

The Examiner also asserts that “Bhalakia et al. discloses allowing a solvent in the coating composition to evaporate to form a coating layer” (at 5). Contrary to the Examiner’s assertions, *Bhalakia et al.* discloses methods of making separate photochromic “functional films” by applying a photochromic composition to glass that is coated with a release agent. (See, e.g., col. 23, lines 32-44.) Solvent is evaporated from the photochromic composition to produce a photochromic “functional film” that is removed from the glass and sandwiched between polycarbonate sheets. (See, e.g., col. 23, lines 44-51; col. 24, lines 1-30.) A “plate” is cut from the polycarbonate/functional film laminate, inserted into a lens mold and then polycarbonate injected into the mold to form the lens. (See, e.g., col. 25, lines 15-35.) Accordingly, *Bhalakia et al.* fails to disclose either the step of using a lens blank, the step of “applying a tie coating composition to the lens blank” or the step of “allowing the solvent to evaporate to form a tie coating layer” on the lens blank, as set forth in independent claims 44 and 56 of the present application.

The Examiner does not assert that any of the other cited prior art, *Smith et al.* or *Tanaka et al.*, discloses either the steps of “allowing the solvent to evaporate to form a tie coating layer” on a lens blank, “partially polymerizing the tie coating layer” on the lens blank, and/or “contacting the [partially polymerized] tie coating layer and photochromic matrix layer,” as set forth in independent claims 44 and 56 of the present application. Furthermore, the Examiner does not assert that any of the other cited prior art discloses either (i) the steps of using a tie coating composition that includes the following elements: “a methacrylate monomer,” “a (meth)acrylated oligomer with a polycarbonate backbone,” “a urethane methacrylate oligomer,” and “a solvent,” and/or the step of using a photochromic matrix layer composition that includes the following elements: “a flexible hydrophilic dimethacrylate monomer,” “a flexible hydrophobic multi(meth)acrylate monomer,” and/or “a urethane methacrylate oligomer, wherein the multi(meth)acrylate monomer contains three or more methacrylate groups or acrylate groups,” as set forth in independent claims 44 and 56 of the present application.

The Examiner argues that dependent claims 48-49 are obvious over the prior art in view of *Tanaka et al.* In particular, the Examiner asserts that “Tanaka et al discloses UV light exposure within the range claimed in claims 48-49” (at 6). *Tanaka et al.* discloses the polymerization of monomers containing liquid crystals using UV irradiation “while being applied with a DC voltage of 3 to 7 V,” to fully polymerize the monomers and form “liquid crystal molecules having a given pre-tilted angle” (*Tanaka et al.*, ¶ 53). Thus, would one would not be motivated to combine *Tanaka et al.*, disclosing liquid crystal displays, with *Gupta et al.* or any other art regarding ophthalmic lenses.

Moreover, *Tanaka et al.* fails to disclose the step of “partially polymerizing the tie coating layer” on a lens blank, as set forth in independent claim 44 from which claims 48-49 depend.

The Examiner further argues that dependent claim 55 is obvious over the prior art in view of *Smith et al.* In particular, the Examiner asserts that “Smith et al discloses a gasket having a seal when place[d] in the mold” (at 6). *Smith et al.* discloses placing a lens mold and gasket on a semi-finished lens, such that the lens forms a seal with the gasket. (*Smith et al.*, col. 20, lines 20-31.) However, *Smith et al.* fails to disclose either the step of “partially polymerizing the tie coating layer” on a lens blank, as set forth in independent claim 44 from which claim 55 depends, or the step of “placing the lens blank in a mold after the partially polymerizing step,” as set forth in dependent claim 55.

CONCLUSION

In view of the foregoing, claims 44-56 and 60-62 are believed to be patentable over the prior art and in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are respectfully requested. Should the Examiner believe that a conversation with applicant’s representative would be useful in the prosecution of this case, the Examiner is invited to call applicant’s representative at the number listed below.


In the event that any charges or fees must be paid or an overpayment has been made in connection with this communication, please charge or credit Deposit Account No. 09-0007. If this payment also requires a Petition, please construe this authorization to pay as the necessary Petition which is required to accompany the payment.

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Respectfully submitted,

ICE MILLER LLP

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By: 
Brian J. Lum (Reg. No. 54,282)
200 West Madison Street, Suite 3500
Chicago, Illinois 60606
Phone: 312.726.8129
Fax: 312.726.6259